

REMARKS

Claims 1-15 are pending herein. Claims 4-10, 14 and 15 have been withdrawn as directed to a non-elected invention. Thus, claims 1-3 and 11-13 are presently under examination.

By this Amendment, the specification is amended to correct a typographical error therein. No new matter is added by this Amendment.

In view of the foregoing amendment and the following remarks, reconsideration of this application is respectfully requested.

I. Rejection Relying Upon EP 0 310 171

Claims 1-3 and 11-13 were rejected under 35 U.S.C. §102(b) or under 35 U.S.C. §103(a) relying upon the teachings of EP 0 310 171 (hereinafter EP 171). This rejection is respectfully traversed.

In the Office Action, EP 171 was correctly summarized as describing thermoplastic polymer fibers comprised of an alternating copolymer of carbon monoxide and alkenes. It was acknowledged that EP 171 did not teach or suggest the physical properties of tenacity, melting point, crystallinity or birefringence as recited in each of independent claims 1-3 of the present application. However, it was alleged that as EP 171 describes at page 2, lines 48-50 that the physical properties of the polymer depend in part on the molecular weight of the polymer, the properties recited in claims 1-3 for the fiber would have either been inherent to or obvious from the teachings of EP 171. Applicants respectfully disagree.

First, Applicants emphasize that at page 2, lines 48-50 of EP 171, it is described that the physical properties of the polymer depend in part on the molecular weight of polymer. It is not indicated what the physical properties of the polymer referred to might be, but the next sentence of EP 171 (page 2, lines 51-52) describes the melting point of the polymer. This portion of EP 171 thus describes nothing more than the well-known fact that the molecular

weight of a polymer is known to affect the melting point of the polymer, i.e., as the molecular weight of the polymer increases, the melting point also increases. EP 171 here describes nothing regarding properties of the fiber (such as tenacity, crystallinity and birefringence) as made from the polymer, and certainly fails to indicate that these properties of the fiber are largely dependent upon the molecular weight of the polymer as alleged in the Office Action (which, as discussed below, is not true).

The properties of the fiber such as tenacity, crystallinity and birefringence are parameters that depend very much on the process conditions under which the fiber is made. As but some of the variables that influence the crystallinity of a fiber derived by melt-spinning, mention may be made of: (1) polymer viscosity (an increase of which may lead to an increase in crystallinity); (2) spinning temperature (an increase of which may lead to a decrease in crystallinity); (3) length of the heated zone (an increase of which may lead to a decrease in crystallinity); (4) temperature in the heated zone (an increase of which may lead to a decrease in crystallinity); (5) degree of cooling in the cooling zone (an increase of which may lead to an increase in crystallinity); (6) linear density of the filaments (an increase of which may lead to a decrease in crystallinity); etc. From this list, which is far from being complete, it is quite evident that the crystallinity is not at all an inherent property related to the composition and/or molecular weight of the polymer from which the fiber is made, but is instead influenced by a number of various processing conditions.

Under the doctrine of inherency, if an element is not expressly disclosed in a prior art reference, the reference will still be deemed to anticipate a subsequent claim if the missing element "is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Continental Can Company v. Monsanto Company, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or

possibly present, in the prior art." Trintec Industries, Inc. v. Top-U.S.A. Corp., 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002). As clear from the foregoing discussion, the teachings of EP 171 can clearly not be found to be sufficient to indicate that the fiber properties recited in claims 1-3 are necessarily present, as opposed to merely probably or possibly present, in the fibers described in EP 171. As such, the assertion of inherency in the Office Action, based solely upon the description at page 2, lines 48-52 of EP 171, is not proper and must be withdrawn.

Moreover, nothing in EP 171 would have led one of ordinary skill in the art to the presently claimed invention, i.e., nothing in EP 171 would have led one of ordinary skill in the art to fibers having the properties recited in claims 1-3 of the present application. EP 171 describes nothing regarding desirable or necessary values for the fiber's tenacity, crystallinity or birefringence. Thus, it also cannot be concluded that one of ordinary skill in the art would have found the presently claimed invention obvious from the teachings of EP 171.

EP 171 describes spinning fibers at considerably high temperatures, i.e., between 242°C and 287°C. As described in the present specification, such high spinning temperatures lead to a variety of problems such as unstable spinning performance, deterioration of the mechanical properties, etc. Many of these problems have their origin in too low of a crystallinity and/or birefringence due to too high of temperatures during processing.

Handling of yarns having higher crystallinity values is extremely difficult. For example, standard methods to draw such yarns often fail due to the tendency of higher crystalline yarns to break more easily while drawn. There is thus a discrepancy between either the desire to obtain yarns with good properties in view of breaking tenacity, which requires high crystallinity, and the desire for easy handling of yarns, which requires lower crystalline values.


In the present invention, this problem is solved, and fibers having a unique combination of physical properties is achieved through a method that requires a certain drawing tension corrected for temperature in the range of 105 to 300 mN/tex. By doing so, the high crystallinity due to the low spinning temperature can be retained and simultaneously the fibers can be treated, i.e., drawn, to give the desired mechanical properties. Thus, the combination of physical properties as recited in present claims 1-3 and 11-13 are achieved by a process neither disclosed in nor suggested by EP 171. One of ordinary skill in the art would have found the combination of physical properties recited in claims 1-3 and 11-13 to be neither inherent to nor obvious from the teachings of EP 171.

For all the foregoing reasons, Applicants respectfully submit that nothing in EP 171 anticipates or renders obvious the fibers having the combination of physical properties recited in claims 1-3 or the rubber articles and tires containing such fibers as recited in claims 11-13 of the present application. Reconsideration and withdrawal of this rejection are thus respectfully requested.

II. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-15 are in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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